Translation of Japanese Patent Application No. Hei7-187946 (dated 25 July 1995) in the name of Kao Kabushiki Kaisha

Prior art and problem to be solved by the invention

[0002] Up to now, in order to promote hair growth and to prevent hair fall, dandruff and itch by normalizing the scalp function and increasing hair follicle function, by promoting blood circulation in the scalp, external use agents with various drug effective components blended therein are used as hair growth agents. As the drug effective components used therein, a blood circulation promoter, a local stimulant, a hair root activator, an antibacterial agent, an anti-seborrheic agent, etc, may be mentionned, and many hair agents have been produced by combining these various components and developping new drug effective components.

[0003] However, usual hair growth agents cannot be said to have sufficient effect in preventing hair fall and suppressing dandruff and itch or to be effective in promoting hair growth. Thus a hair growth agent having an excellent effect to suppress dandruff and itch and to prevent hair fall is desired.

Means to solve this problem

[0004] In view of the foregoing, the present inventors have found, as the result of intensive studies, that when using a specific polyalkylene glycol monoalkyl ether, a composition useful as a scalp external use agent having an excellent effect of suppressing dandruff and itch and preventing hair fall can be obtained, and achieved the present invention.

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[0009] Because these polyalkylene glycol monoalkyl ethers (I), when applied on the scalp, besides increasing the scalp moisture retaining capacity, can increase the sebum fluidity in hair funnel parts and pores, suppress the excessive growth of the usual scalp bacterial flora by smoothing sebum secretion, and keep it clean, they can prevent hair fall dandruff and itch. Moreover, their safety is excellent.

[0010] The polyalkylene glycol monoalkyl ethers (1) can be used singly or in combination of two or more, and are mixed in the scalp external use agent compositions of the invention at a rate of 0,1 to 5 weight percents (noted "%" herein below), preferably 0,3 to 3 %. If this rate is less than 0,1 %, a sufficient effect cannot be obtained, and if it is more than 5 %, sticky feeling becomes strong.

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[0024] The salp external use agent compositions of the present invention can be prepared according to usual procedures, by mixing each component in for example 10 to 90 % ethanol solution, and they can be made in the form of hair tonic, nutritive material for growing hair, milk, lotion, etc., to be applied on the scalp.

Effect of the invention

[0025] The scalp external use agent compositions of the invention have excellent effects of suppressing dandruff and itch and preventing hair fall. Moreover, when an antibacterial agent, a scalp secretion controlling agent and/or a blood circulation promoter are used together with the polyoxyalkylene glycol monoalkyl ethers (1) in the scalp external use agent compositions of the invention, their absorption through the hair pores is increased and the effects of bacterial control, scalp secretion control and blood circulation promotion become further excellent. Moreover, the effects of the invention can be further increased by using an oil absorbing carrier.

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Evaluation method

[0028] Tests were made on 42 male persons having been long worried by dandruff and itch, who were observed as regard to scalp condition, men with much internal dandruff and itch, and 23 men with much hair fall, fallen hair being collected at the time of washing, were sampled. Using a tonic agent, the composition of which is shown in Table 1, the procedure was as follows. Shampooing was performed twice a day, in the morning and before going to bed as a rule, and thereafter, a suitable amount was applied to the scalp which then was massaged. Moreover, throughout the test, a commercial shampoo was used for uniformisation, and further use of rinse agents, tonics and hair dressing agents and performing perm and hair dyeing were excluded. The effects were evaluated as follows. A shampooing was performed by a beautician once every two weeks, the hairs which have fallen out on this shampooing were gathered, the number of fallen hairs was measured, the hair root condition was observed for classification, and an evaluation of the dandruff grade and a verification of existence or absence of itch and its intensity according to the feeling of the subject man were made, according to the condition 48 hours after shampooing by he beautician. Scoring basis is as follows. The inventive composition was tested on 11 persons, a comparative composition was tested on 12 persons, and the average results are shown in Table 2.

Table 1

	Inv. 1	Comp.
Diethylene glycol monomethyl ether	2.0	–
Ethanol	50.0	50.0
Purified water	Balance	Balance
	100	100

Table 3 (Examples according to the invention)

	2	3	4	5	6	7
Diethylene glycol monomethyl ether	1.0	0.5	–	0.5	0.5	1.0
Diethylene glycol monoethyl ether	–	0.5	–	1.0	0.5	1.0
Dipropylene glycol monoisopropyl ether	–	0.5	3.0	–	0.5	–
Piroctonolamine	–	–	–	0,1	–	–
Miconazole	–	–	–	–	0,1	–
Triclosan	–	–	–	–	–	0,1
Senpuri extract *1	–	–	–	–	–	3,0
Minoxidil	–	–	–	–	–	0,5
Otogilisou extract *2	–	–	–	–	–	–
Tocophérol acetate	–	–	–	–	–	–
9-Hydroxynonaoic acid	–	–	–	–	–	–
10-Hydroxydecaoic acid	–	–	–	–	–	–
11-Hydroxyundecaoic acid	–	–	–	–	–	–
Tospal 120 *3	–	1,0	–	–	–	–
Porous vinyl polymer *4	–	–	1,0	–	–	–
Polyoxyethylene (25 EO) cured himashi oil (castor oil ?)	–	0,4	0,4	0,4	0,2	0,2
Polyoxyethylene (20 EO) sorbitane monostearate	–	–	–	–	–	–
Cetanol	–	0,1	–	–	–	–
Squalane	–	–	–	–	–	–
Isopropyl palmitate	–	–	–	–	–	–
Perfume	0,3	0,3	0,3	0,3	0,3	0,3
Ethanol	50,0	30,0	30,0	50,0	50,0	50,0
Purified water	Bal.	Bal.	Bal.	Bal.	Bal.	Bal.

*1 : Product of Ichimaru Pharcos Co., Ltd

*2 : Product of Maruzen Corp.

*3 : Silicone resin, product of Toshiba Silicone Co. : mean particle diameter 2 μm, squalene (oil and fats) absorption about 1 ml

*4 : Porous vinyl polymer obtained according to the synthesis example 2 of JP-Sho63-316715 : mean particle diameter 5 μm, squalene (oil and fats) absorption about 2 ml

Table 4 (Examples according to the invention)

	8	9	10	11	12
Diethylene glycol monomethyl ether	1.0	3.0	4.0	–	
Diethylene glycol monoethyl ether	–	–	–	4.0	2.0
Dipropylene glycol monoisopropyl ether	1.0	–	–	–	2.0
Piroctonolamine	–	–	–	–	–
Miconazole	–	–	–	–	–
Triclosan	0,1	0,1	–	–	–
Senpuri extract *1	3,0	3,0	–	–	–
Minoxidil	–	–	–	–	–
Otogilisou extract *2	1,0	–	–	–	–
Tocophérol acetate	–	0,1	–	–	–
9-Hydroxynonaoic acid	–	–	5,0	–	–
10-Hydroxydecaoic acid	–	–	–	3,0	–
11-Hydroxyundecaoic acid	–	–	–	–	3,0
Tospal 120 *3	–	–	–	–	–
Porous vinyl polymer *4	–	–	–	–	–
Polyoxyethylene (25 EO) cured himashi oil (castor oil ?)	0,2	0,2	–	–	–
Polyoxyethylene (20 EO) sorbitane monostearate	–	–	1,5	1,0	1,0
Cetanol	–	–	–	–	–
Squalane	–	–	0,5	0,5	0,5
Isopropyl palmitate	–	–	0,5	0,5	0,5
Perfume	0,3	0,3	0,3	0,3	0,3
Ethanol	50,0	50,0	10,0	10,0	10,0
Purified water	Bal.	Bal.	Bal.	Bal.	Bal.

Tables 5 and 6 : Comparative examples, containing the same ingredients as the examples of the invention, except the polyalkylene glycol monoalkyl ethers.

Tableau 7

	13	14	15	16	C13	C14	C15
9-Hydroxynonaoic acid	2	–	–	–	2	–	–
10-Hydroxydecaoic acid	–	2	–	–	–	2	–
11-Hydroxyundecaoic acid	–	–	2	2	–	–	2
Diethylene glycol monomethyl ether	3	–	–	1	–	–	–
Diethylene glycol monoethyl ether	–	3	–	1	–	–	–
Diethylene glycol monoisopropyl ether	–	–	3	1	–	–	–
Ethanol	50,0	50,0	50,0	50,0	50,0	50,0	50,0
Purified water	Bal.	Bal.	Bal.	Bal.	Bal.	Bal.	Bal.